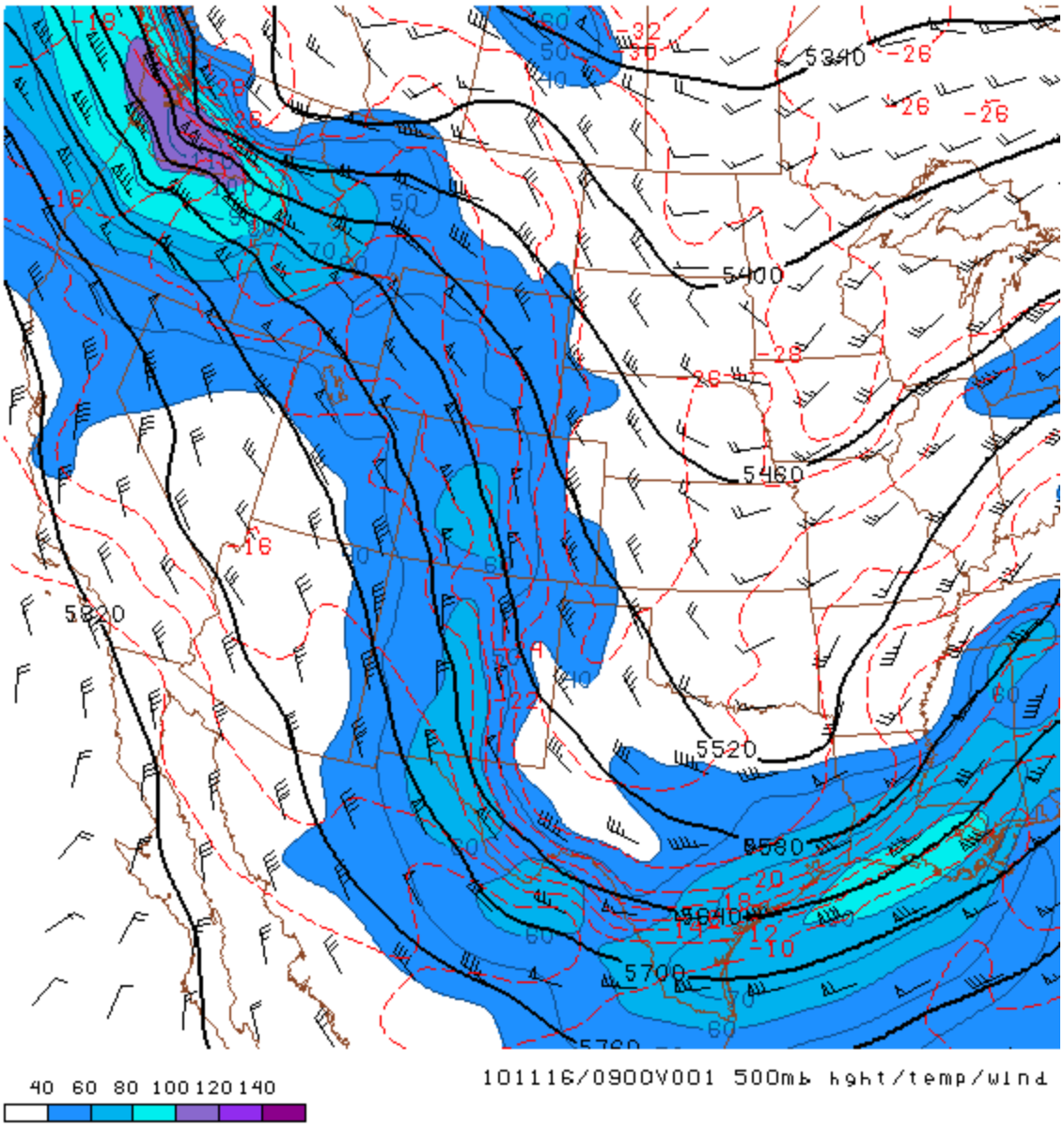
November 2010 Wind Storm

Summary

A Pacific storm brought strong and damaging winds to northeast Oregon and southeast Washington from the evening of November 15th through the morning of November 16, 2010. The strongest gusts occurred as a cold front crossed the region during the overnight hours. Numerous reports of downed power lines and damaged trees were received. A list of storm reports is available here: STORM REPORTS. A list of observed wind speeds is available (below) at the end of this report.

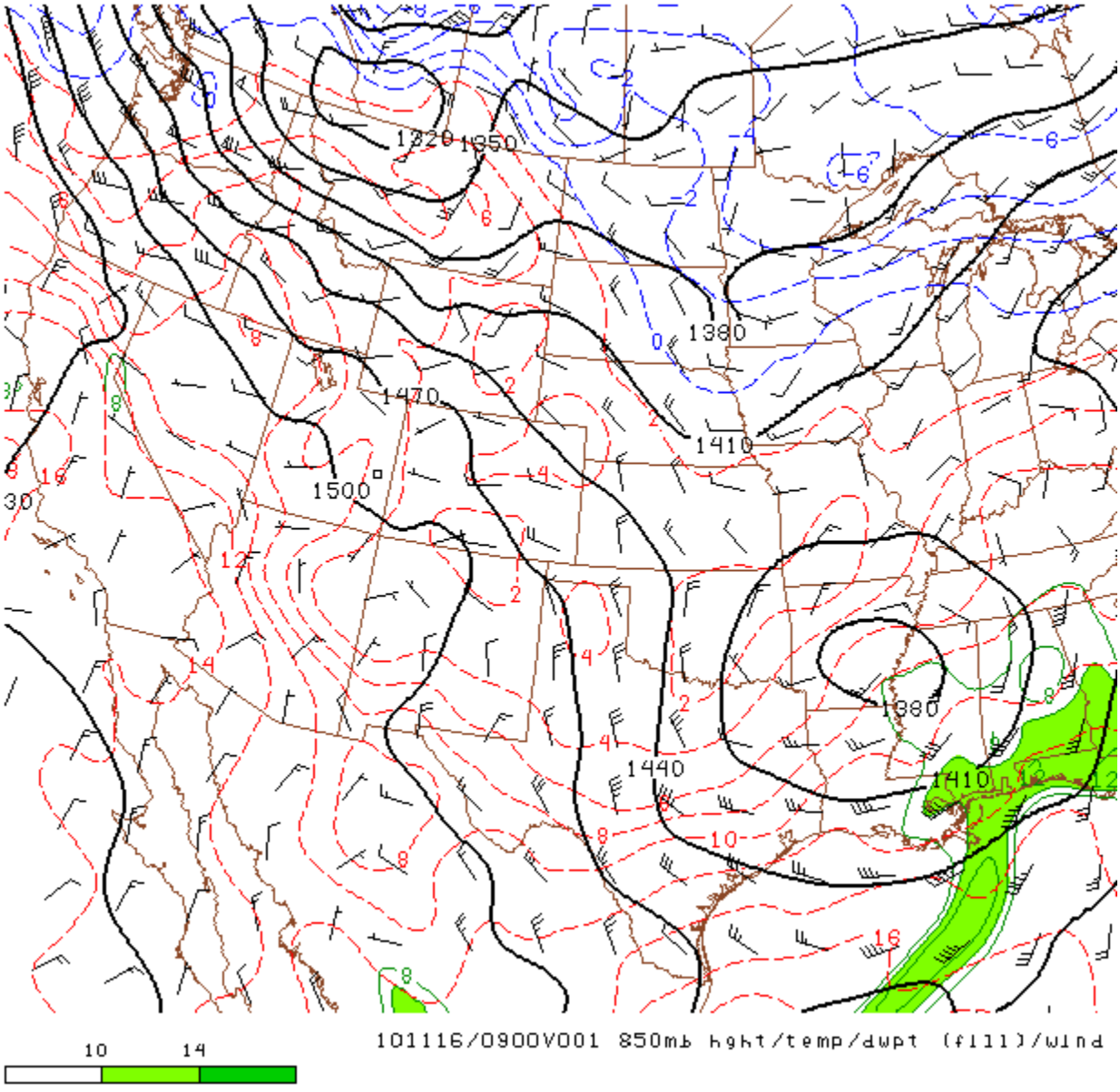
Figures

The track of the system across the Pacific Northwest brought the strongest winds aloft (the core of the jet stream) across northeast Oregon and southeast Washington. The figure below shows wind barbs and wind speeds from around 20,000 feet above sea level at 1:00 am PST on November 16. The plum-colored shaded indicates an area with wind speed exceeding 100 knots.



Winds closer to the surface (the low-level jet) were also very strong with this system. The chart below shows winds and temperatures at around 5000 feet above sea level at 1:00 am PST November 16. Look closely to see a 70 knot wind over southeast Washington. (A penant indicates 50 knots and each line indicates 10 knots. Thus a penant and two lines plotted together indicate 70 knots.)

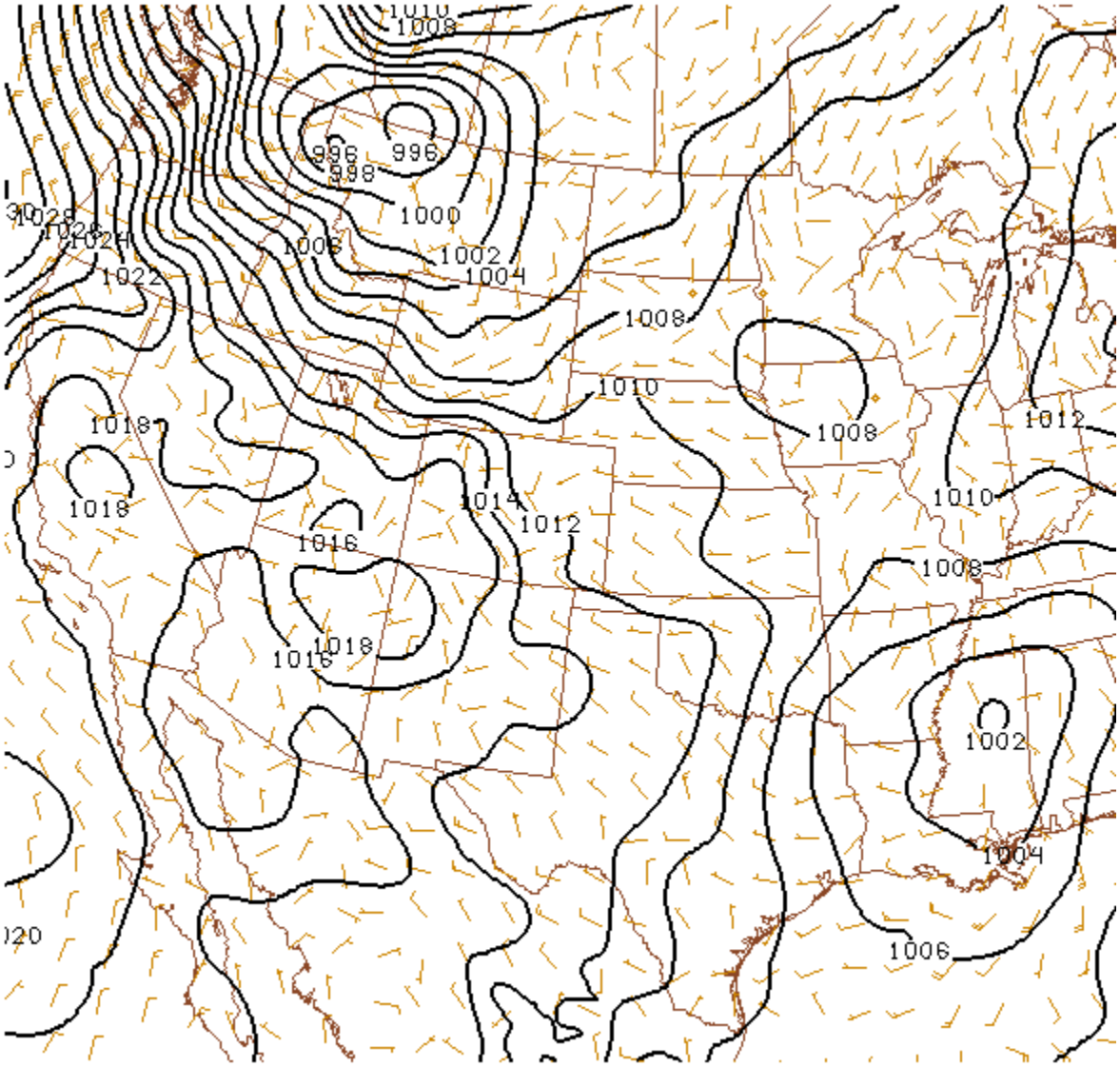
The passage of the cold front brought these winds to the surface creating damaging wind gusts exceeding 70 mph at some low-elevation locations. At some ridge-top and mountain locations, wind gusts exceeded 100 mph.



The center of the surface low pressures with this system moved across northern Washington, the Idaho panhandle, and into Montana. This track created a very strong surface pressure gradient across the Columbia Basin. The pressure gradient force coupled with strong momentum aloft to create strong surface wind even at the lowest

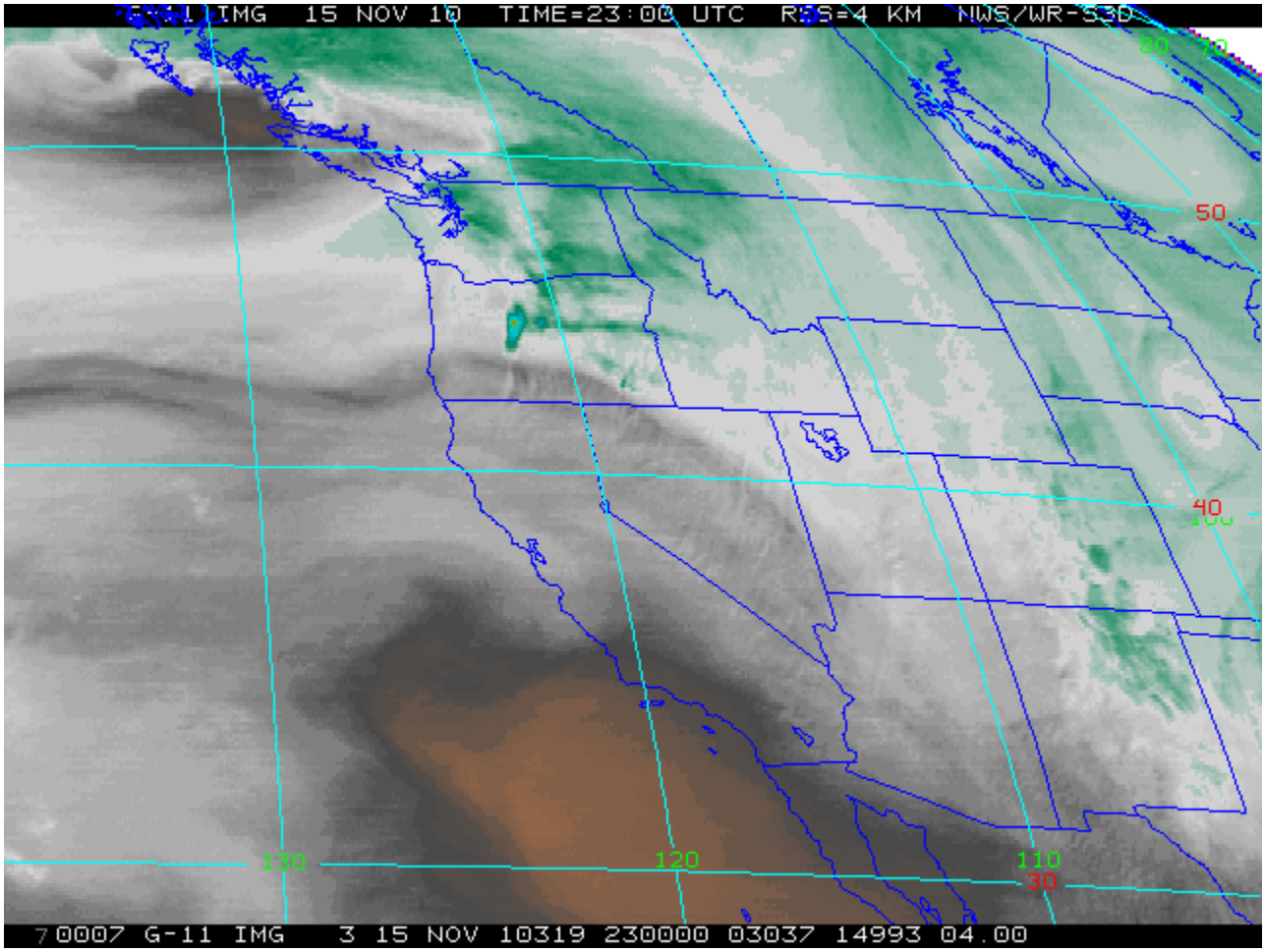
elevations of the Columbia Basin. For example, Vernita Bridge across the Columbia River along Washington SR 24 (elevation 430 feet)had a peak sustained wind of 41 mph and a peak gust of 71 mph. A bit higher, Rattlesnake Ridge (elevation 3560 feet) near the Tri-Cities, WA, had a peak sustained wind of 87 mph and a peak gust of 108 mph.

The figure below shows surface pressure at 1:00 am PST on November 16. At that time the center of the low had moved into Montana creating a strong gradient between high pressure over southwest Oregon and low pressure over northern Idaho and Montana.

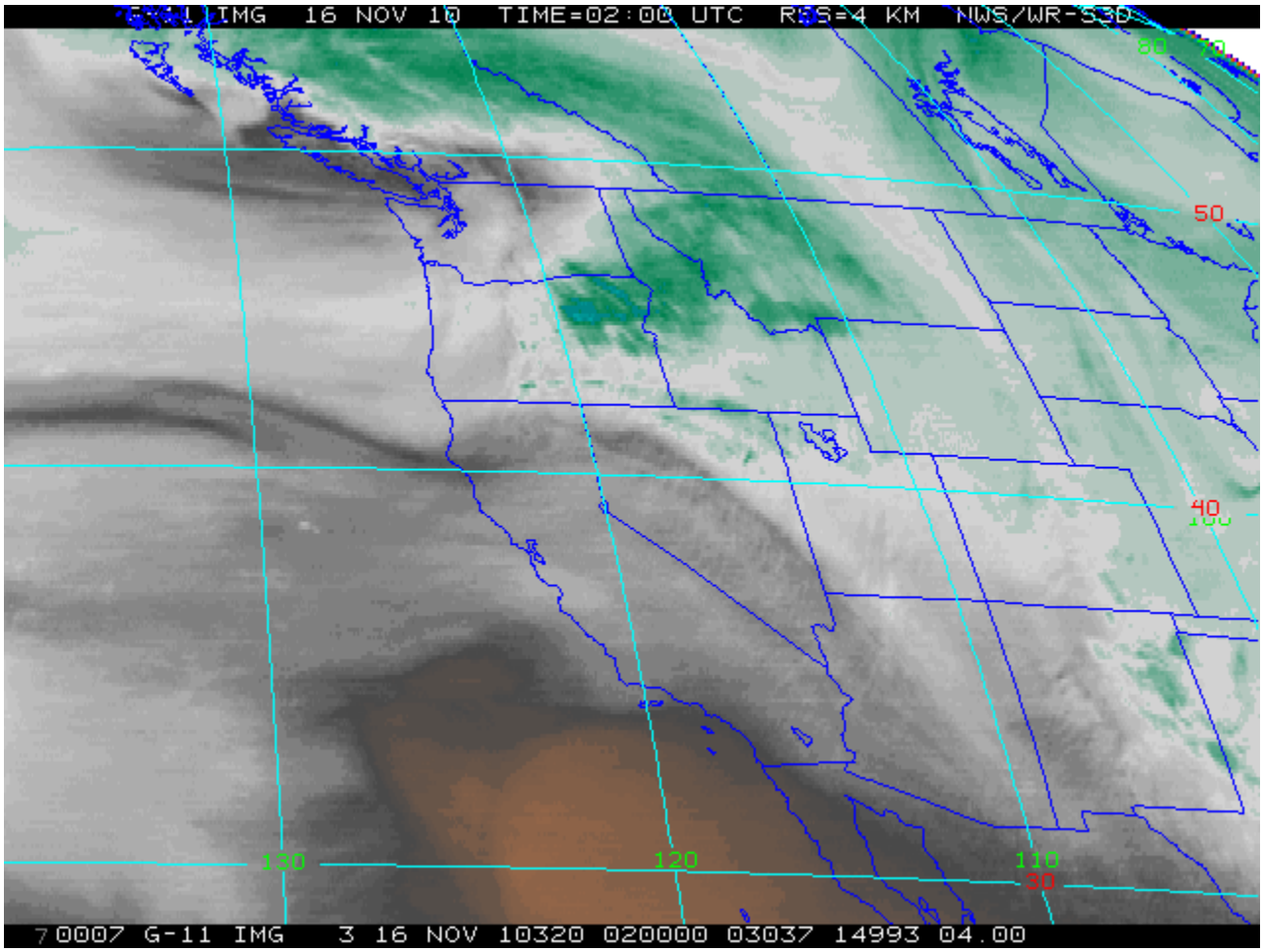


The sequence of figures below show water vapor satellite imagery every 3 hours from 7:00 am on November 15 to 1:00 am on November 16. Water Vapor imagery shows where moisture has been lifted into the atmosphere (green shading) and where sinking motion has dried the atmosphere (dark areas). Pay attention to the dark area near the Alaska coast at 7:00 am November 15 and moving across the Pacific Northwest by 1:00 am November 16. This dark area is the sinking, drying air (behind a cold front) which brought strong winds aloft to the surface.

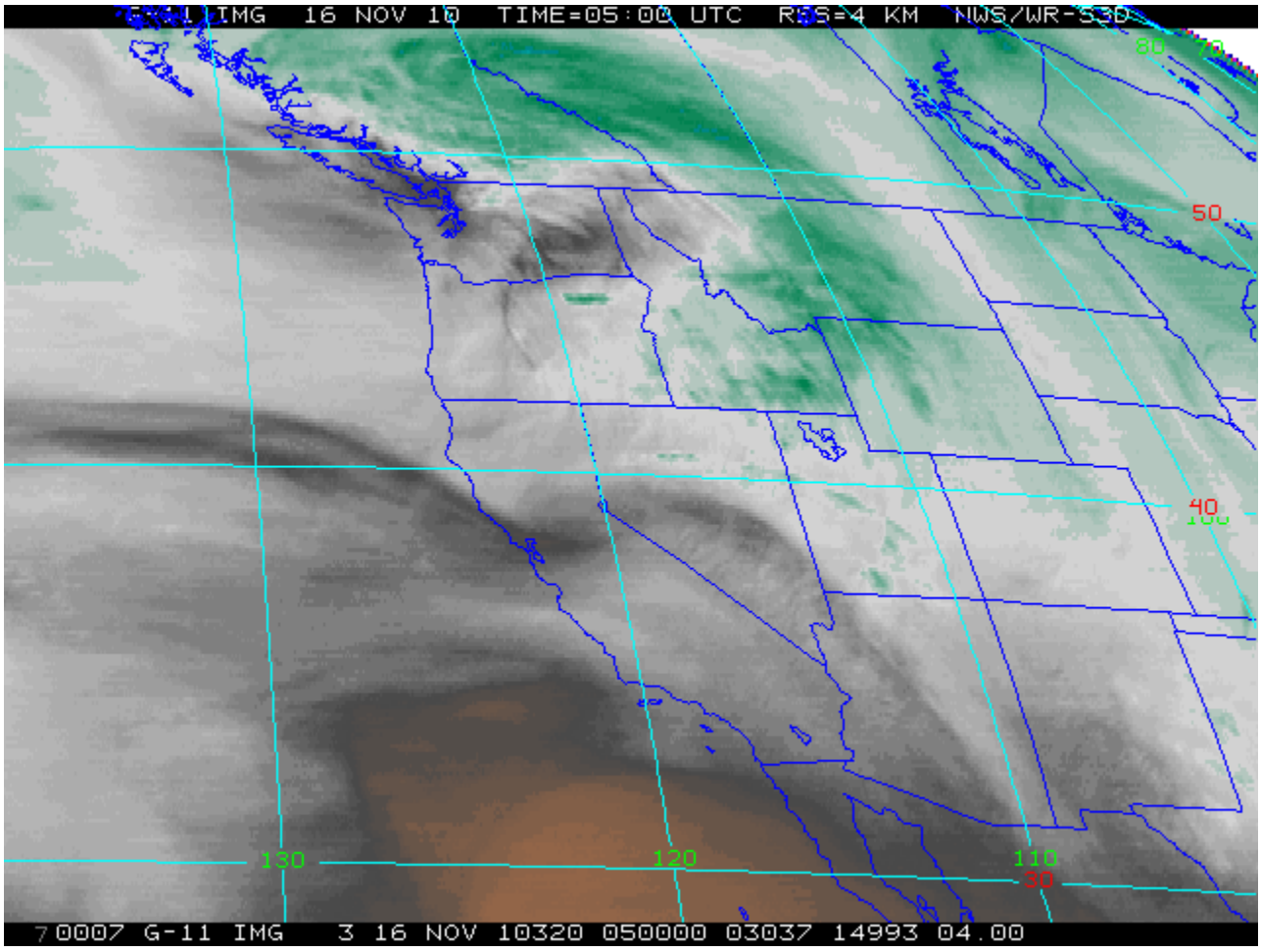
The next image is from 7:00 am PST on November 15.



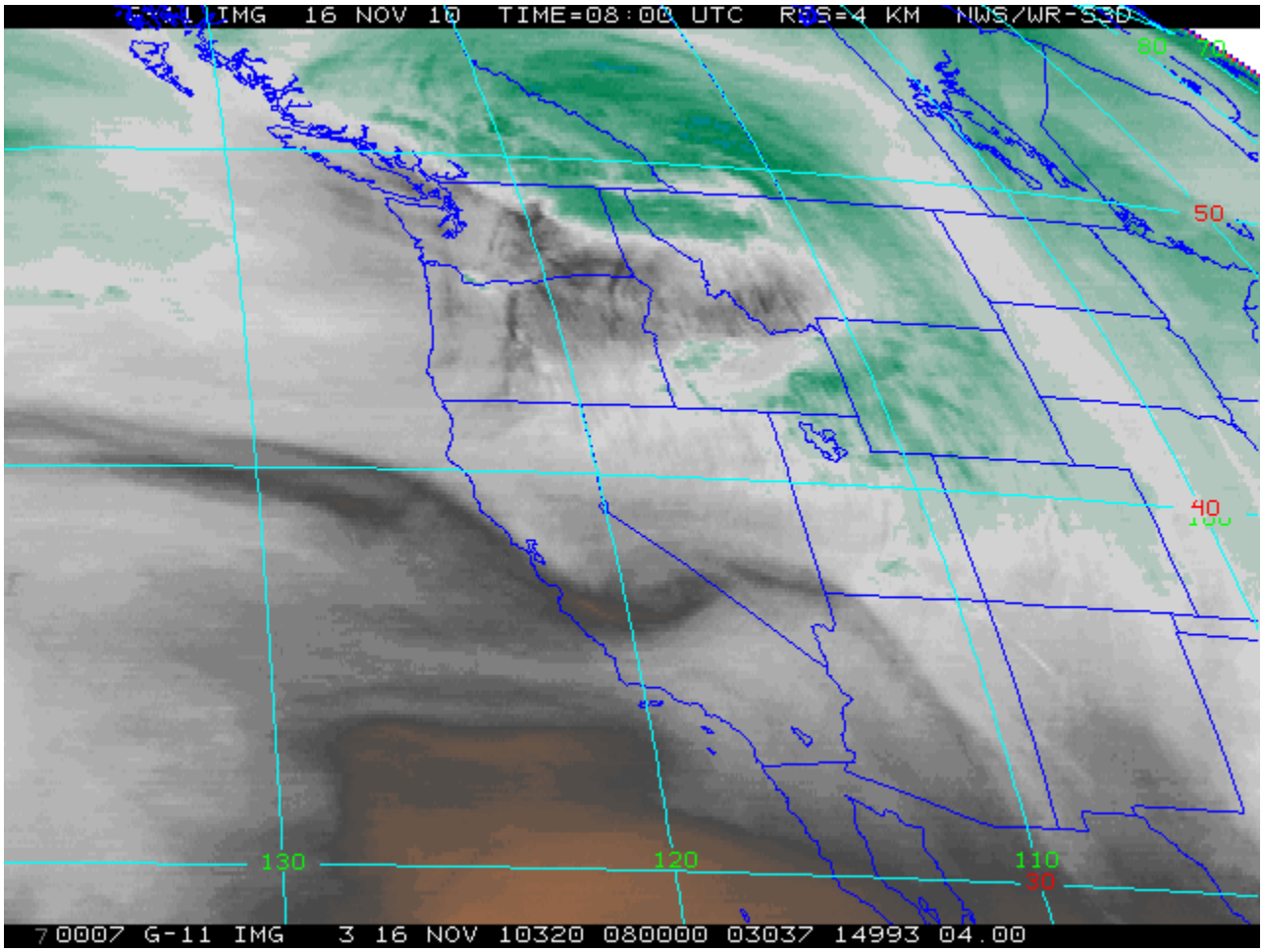
The next image is from 10:00 am PST on November 15.



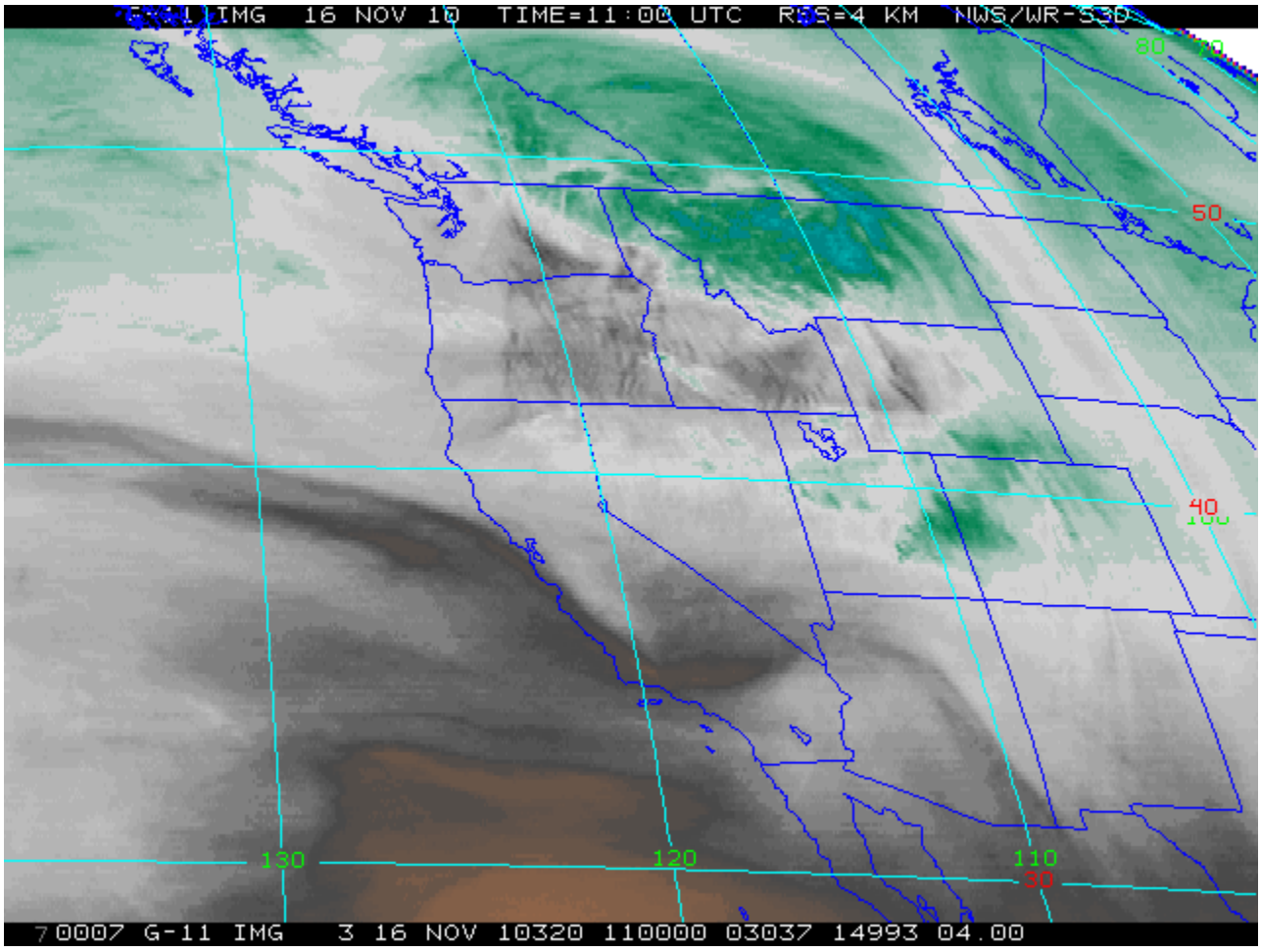
The next image is from 1:00 pm PST on November 15.



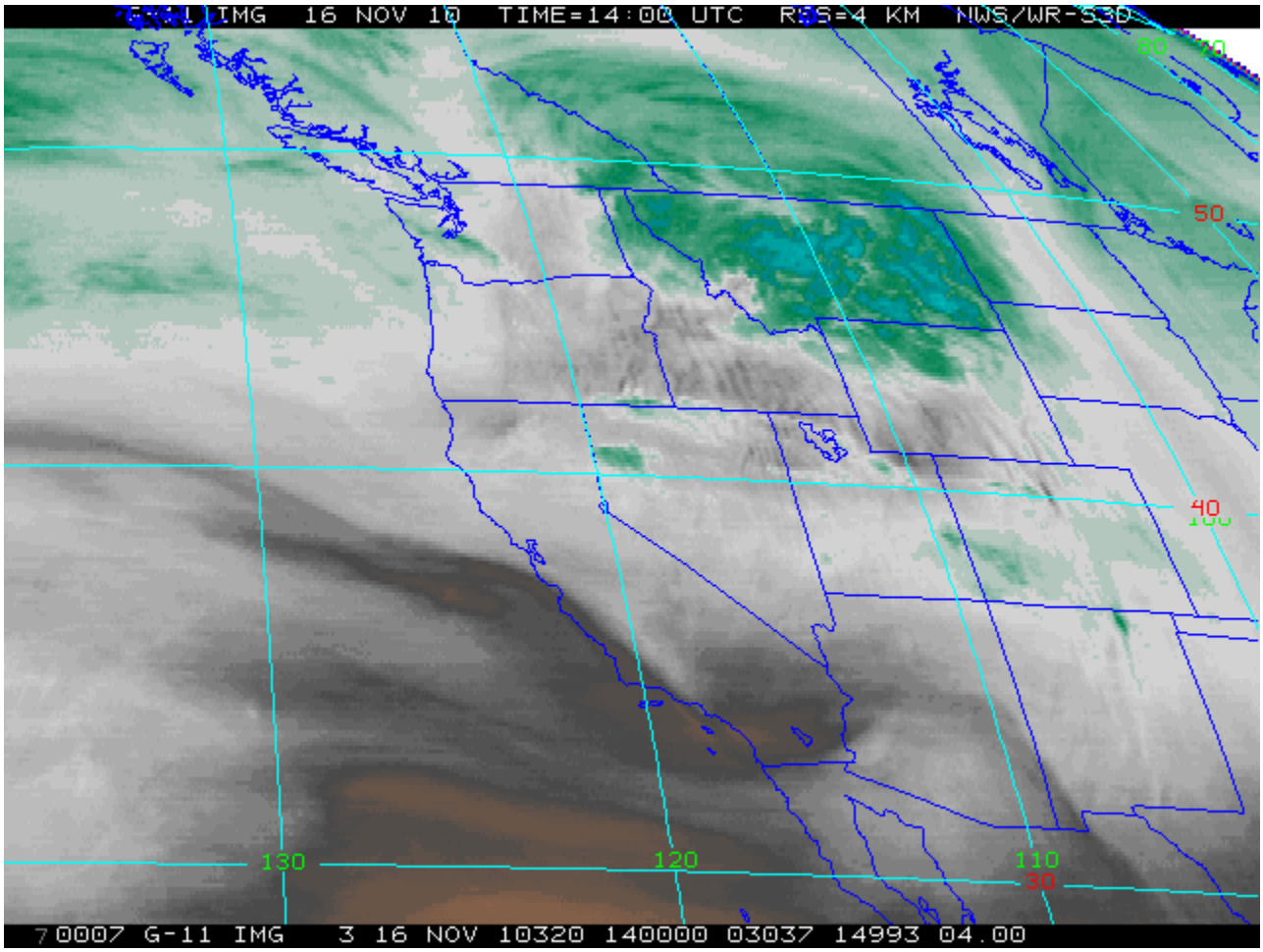
The next image is from 4:00 pm PST on November 15.



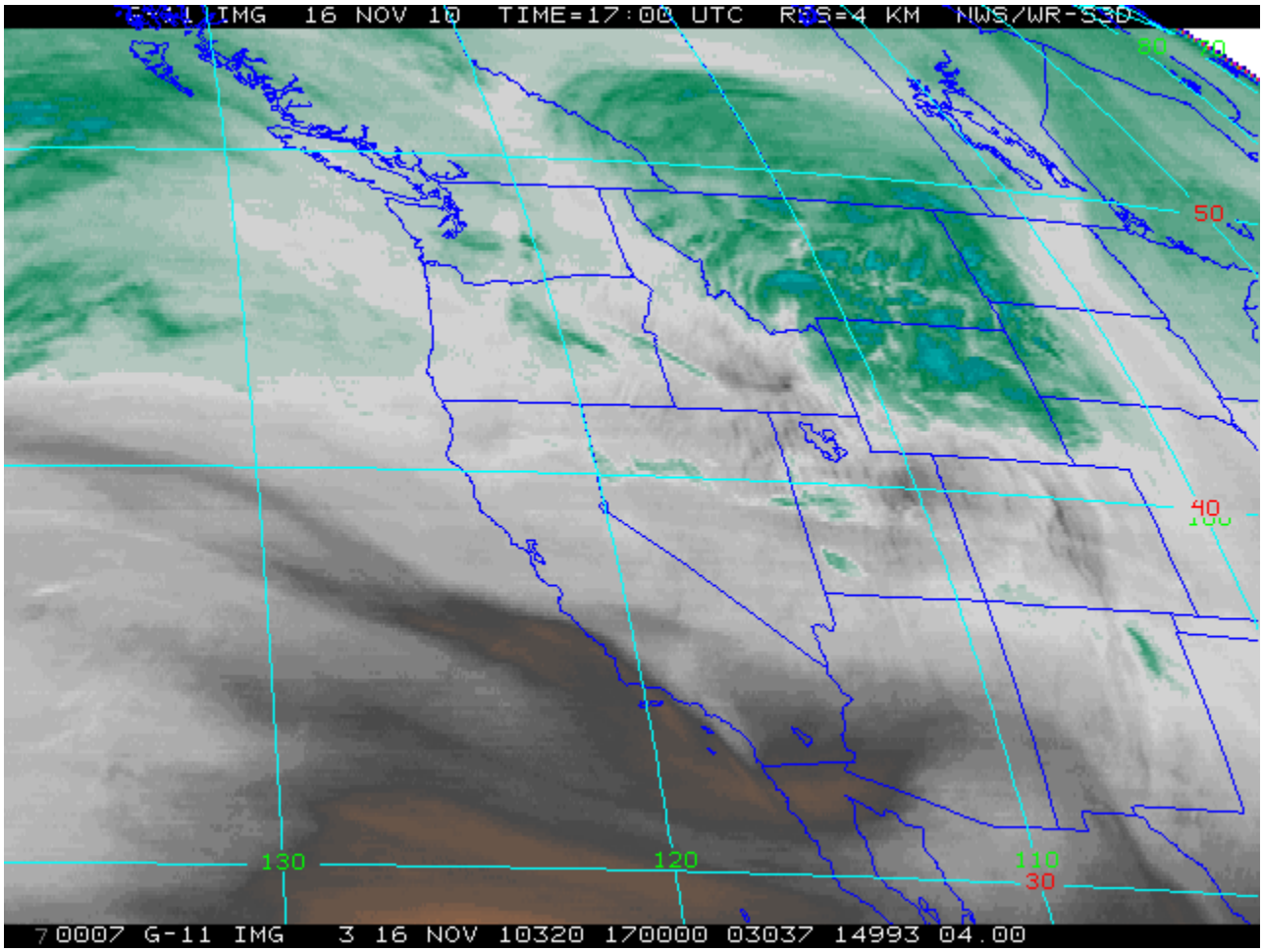
The next image is from 7:00 pm PST on November 16.



The next image is from 10:00 pm PST on November 16.



The next image is from 1:00 am PST on November 16.



This concludes this storm summary of the strong wind event across northeast Oregon and southeast Washington on November 15-16, 2010. A list of reported wind speeds (originally issued as a public information statement) is appended below.

public information statement
National Weather Service Pendleton Oregon
946 pm PDT Tue nov 16 2010

...strong winds observed November 15-16, 2010 across southeast Washington and northeast Oregon...

A strong pacific storm brought very windy conditions across large portions of northeast Oregon and southeast Washington the evening of November 15th through the morning of November 16th, 2010. The strongest gusts were associated with a cold front that passed during the overnight hours. Numerous reports of downed power lines and damaged trees were received.

The following table lists observed peak gusts of 50 mph or greater along with selected observed sustained wind speeds.

north central Oregon
---
north pole ridge raws - 3480 ft..... 83 mph (54 mph sustained)
us97 @ mount identifier - 3480 ft..... 50 mph
patjens raws - 2170 ft..... 62 mph

lower columbia basin of Oregon
---
reese - 1034 ft..... 62 mph
echo - 722 ft..... 58 mph
i-84 @ lorenzen rd - 1310 ft..... 56 mph
hermiston airport - 636 ft..... 54 mph
umatilla raws - 270 ft..... 50 mph

grande ronde valley, Oregon
---
la grande/union county airport - 2717 ft. 51 mph

wallowa county, Oregon
---
sheep ridge - 7002 ft ..... 107 mph (81 mph sustained)
mt howard - 8150 ft..... 74 mph
3 mi north of joseph - 3984 ft..... 74 mph (44 mph sustained)
harl butte raws - 6071 ft..... 62 mph
enterprise airport - 3927 ft..... 51 mph

northern blue mountains of Oregon
---
black mtn ridge raws - 4965 ft..... 54 mph

southern blue mountains of Oregon
---
ruggs - 2950 ft..... 58 mph

ochoco - john day highlands, Oregon
---
antelope raws - 6460 ft..... 71 mph (44 mph sustained)
fall mountain raws - 5949 ft..... 55 mph
board hollow raws - 4188 ft..... 50 mph

northern blue mountain foothills, Oregon
---
pendleton airport - 1493 ft..... 67 mph (51 mph sustained)
helix - 1755 ft..... 58 mph (44 mph sustained)
11 mi southwest of helix - 1581 ft..... 58 mph

southern blue mountain foothills, Oregon
---
ajax - 2090 ft..... 62 mph (42 mph sustained)
fossil - 2709 ft..... 62 mph
mikkalo - 1457 ft..... 61 mph
condon - 2838 ft..... 57 mph
lexington airport - 1624 ft..... 52 mph

Oregon cascades east slopes
---
round mountain raws - 5910 ft..... 54 mph
wamic mill raws - 3320 ft..... 54 mph

yakima valley
---
priest rapids dam - 460 ft..... 83 mph
outlook - 778 ft..... 54 mph (41 mph sustained)
wa hwy 24 @ wa hwy 241 - 1263 ft..... 53 mph (43 mph sustained)

lower columbia basin of Washington
---
rattlesnake mountain - 3560 ft ..... 108 mph (87 mph sustained)
gable mountain - 1086 ft..... 72 mph (54 mph sustained)

hanford e.O.C. - 1240 ft..... 71 mph (46 mph sustained)
vernita bridge - 430 ft..... 71 mph (41 mph sustained)
ringold - 620 ft..... 66 mph (45 mph sustained)
hanford army loop road - 564 ft..... 64 mph
pasco, tri-cities airport - 407 ft..... 63 mph (57 mph sustained)
kennewick vista field - 502 ft..... 61 mph
legro - 581 ft..... 58 mph
richland airport - 394 ft..... 56 mph
hanford franklin county - 876 ft..... 56 mph
benton city - 1056 ft..... 55 mph
juniper dunes - 950 ft..... 55 mph
i-182 @ i-82 - 827 ft..... 55 mph
sellards rd @ wa hwy 221 - 1079 ft..... 54 mph (45 mph sustained)

blue mountain foothills, Washington
---
dayton - 1627 ft..... 51 mph

Washington cascades east slopes
---
white pass (top) - 5909 ft..... 112 mph (55 mph sustained)
mission ridge - 6739 ft..... 105 mph (60 mph sustained)
sedge ridge raws - 4300 ft..... 88 mph (59 mph sustained)
peoh point raws - 4020 ft..... 61 mph

simcoe highlands
---
grayback raws - 3800 ft..... 84 mph (49 mph sustained)
highbridge raws - 2106 ft..... 65 mph
goldendale east - 1690 ft..... 59 mph
maryhill - 695 ft..... 55 mph (43 mph sustained)